

Theater Forecast Unit Forecast Review

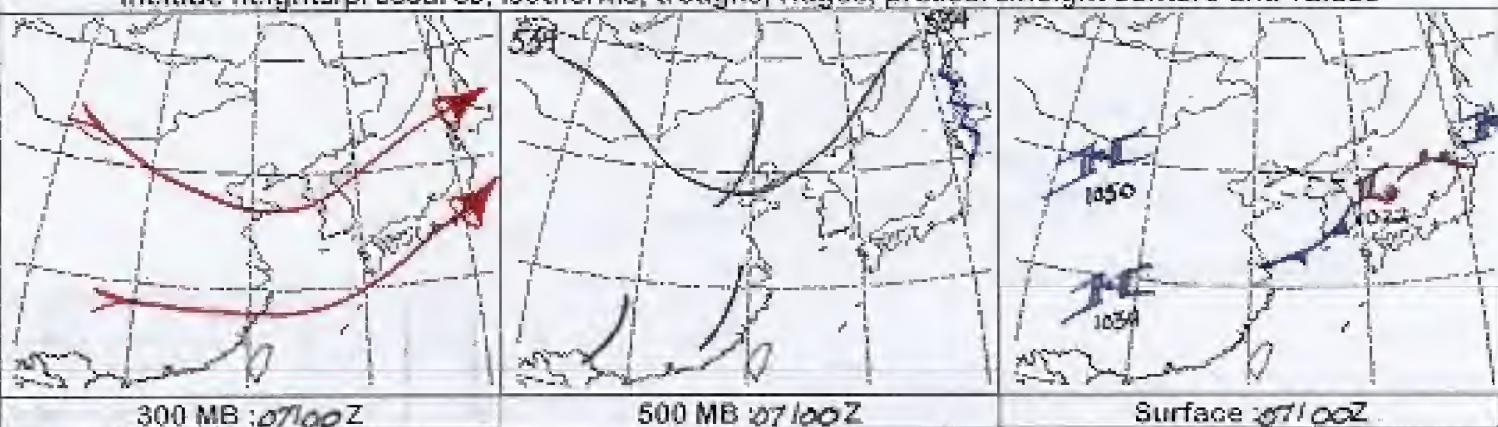
Date: 7 DECEMBER 1998

Season: WINTER

Forecaster: C. Parry
Reason for review: Thunderstorm that occurred over (50) (50) at 1000Z (07Z)

Synoptic Situation

Include heights/pressures, isotherms, troughs, ridges, pressure/height centers and values



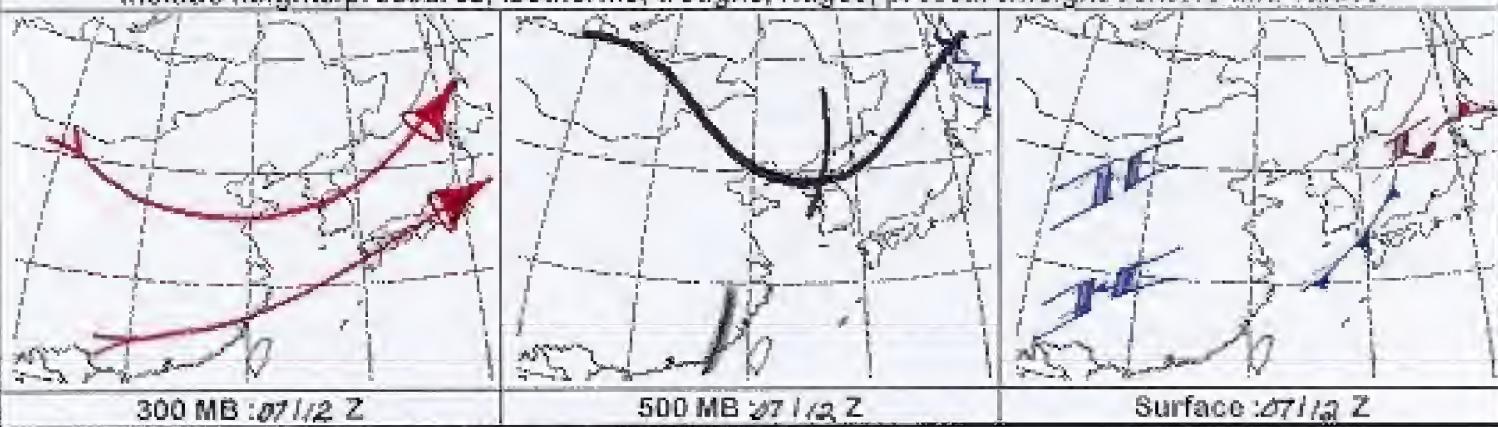
Initial Forecast Reasoning: Longwave low located northward, extending down over the Gulf of Pohai. NW Branch of NLP located over Central Mongolia moving over the Shantung Penn. along the 300Z with the New Penn cold running over the Lesser Lin Coast. NW Branch 1st amplitude had decreased 2mb past 12 hours and after Post Analysis, it had dropped 1°. Scumb Ridge Show low located at approx 114°E - 45-48°N (manchuria, korea, central Penn) supporting marshy wave (1022mb) 2° East of coast. System had decreased back 10mb 24hrs, as it moved into the base of the longwave low. Forecast was supported this with - - - - - declining clouds tops along the warm sector of Baroclinic low. wave was moving S-SE at 15mb (2010-2120mb) with cold frontal boundary moving S-SE at 10-15mb. Post 12hrs wave had slowed 10mb due to increase in cyclogenesis. NCEP's model did not pick-up on low-level circulation of post-frontal low but did pick-up 1° on front of enhanced clouds over the west sea. A west low back Hian was located over the Gobi Desert (1050mb) and had built 2mb at 071000 - so isotherm was at approx 10000ft. by 0700 had dropped to 10000ft. This coincided with frontal passage at initial onset of low. After frontal passage, 40s. from across the low showed a gradual cooling of temps and an increase in altitude of barometric pressure resulting in an increasing of a stabilizing atmosphere. Thus initially, Forecast was the onset of cold air on 50 with little to no expected development.

Other models: MMS did not pick-up on TSRS however did show wave

Post Analysis

ON BACK →

Include heights/pressures, isotherms, troughs, ridges, pressure/height centers and values



Kunsan (KPAK) MMS for DEC 7 out

- indicated clouds up to 8000ft MSL
- 3 hr precip totals ranging from -.01 -.03 for 3-36 hr pd.
- NW SFC winds switching NE at 08100Z

- Kunsan (KPAK) MAF altitudinal

outv significance was noted 7 Dec
precip showed "snowshowers" as opposed to snow.

at 071074Z RKTIL first reported TSRA. at 0710721 RKSC first reported TSRA.

Initialization of models (NOGAPS PMLL) found no major discrepancies.
300mb. Jet placements at NKN + 3RN branch did very well. NKN branch
decided south of the Shantung Pen over the DAZ. 3RN branch over SW China
so. of Korea and was having no effect to weather over the Pen.
500mb. Placement is also over Shantung Pen stretching down to SFC low
over east sea was good as well as amplitude when compared to VA.
700mb. Moisture cuts evident when compared to SAT over Pen, but this
feature is not uncommon with NOGAPS.

SFC low on both MAF + NOGAPS compared well with 802-SFC anal.
when comparing 07102 + 071062 SKew-T (RK50) sounding
of 0800Z showed that the -20 isotherm had lowered 400ft from
1000ft to 1200ft. overall Skew-T showed only minor destabilization
of the atmosphere

Short-Range forecaster + Met-Watch believed that a Thunderstorms advisory
was not warranted due to the weak instability present.
Initial iteration of the Skew-T showed little to no significant
increase in the lapse rates or destabilization, thus
no advisory was sent.

Post Analysis Reasoning: Most thunderstorms over Korea are the Air Mass Type (summer). However, other effects can aid in the formation of TSUBUS, such as orographic, cold core, and with a frontal boundary helping lift the warmer, moist less dense air. In this case, in analyzing the DATA, the MET-WATCH misinterpreted the location of the -20 isotherm. (Initially thought -20 was at 220ft+) after initial interpretation of Doppler radar had build-ups 110-120ft.

In analyzing DATA and SKEW-T believe the minimal conditions for TSUBUS were met. After reviewing stability indices at 2400ft, INDICES NEEDED FOR GOOD THUNDERSTORM DEVELOPMENT

			071000Z	071000Z
CT (cross Totals)		20	CT	-9.4
VT (vertical Totals)	4000ft to 28000ft	~ 326	VT	23.4
TT (Total Totals)	Expect no TSUBU	44-48	TT	14.2
SSI (Shear/lift index)		3 to 1 ^{good} trigger	SSI	14.4
LI (lifted Index)		0 to -2	LI	11.8
TI (Thompson Index)	4000ft to 20000ft	70-89 weak	TI	-27.9
KI (K.I %)			KI	-15.4
KO (Likelihood of TSUBU)		5,000 to 11,000 weak WBZ	KO	12.8
WBZ			1800ft	1700ft

Lessons Learned:

Lessons learned from this event warrants a more vigilant MET-WATCH as well as attention to detail.

In addition, although uncommon in Korea winter thunderstorms are possible, the importance of a good initial interpretation of synoptic situation is a must! as well as the importance of the -20° isotherm being a good tool for Thunderstorm Top Threshold.

Team Chief:

Superintendent:

IM:

BOTTOM LINE ON THIS REVIEW
IS THAT ALTHOUGH THE INDICES
DIDN'T INDICATE ANYTHING OTHER
THAN STABLE CONDITIONS AFTER 2400ft,
THE POST COLD FRONTAL TEF WAS MISSED (TRIGGER)
AND A FORECAST SOUNDING WAS NOT ACCOMPLISHED